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10/681,497	10/08/2003	Stephen G. Bales	LA 001	5906

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EXAMINER
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DANIELS, MATTHEW J

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1732

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/681,497  
Filing Date: October 08, 2003  
Appellant(s): BALES, STEPHEN G.

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Stephen G. Bales  
Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 21 December 2006 appealing from the Office action mailed 1 December 2006.

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**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,221,781	AIDA ET AL.	6-1993
6,368,529	LLOYD ET AL.	4-2002

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

### ***Double Patenting***

Obviousness-type double patenting rejections were set forth previously over application 10/909,053 and application 11/149,808, but are withdrawn in this Examiner's answer.

A terminal disclaimer was filed in application 11/149,808 on 26 December 2006 disclaiming the terminal part of the statutory term of any patent granted on this application. The obviousness-type double patenting rejection over the 11/149,808 application is withdrawn.

The obviousness-type double patenting rejection over the 10/909,053 application is withdrawn in view of the 30 January 2007 Examiner's amendment and 12 September 2006 declaration under 37 CFR 1.132 in the 10/909,053 case.

### ***Claim Rejections - 35 USC § 102***

**Claims 1, 4, 5, 11, 14, and 15 are rejected under 35 U.S.C. 102(b) as anticipated by Aida (USPN 5221781).**

**As to Claim 1**, Aida teaches a method for forming lignocellulosic thermoplastic composite products comprising incorporating an amount of boron-containing fungicide prior to forming the composite product (3:39-55, 6:18-21, 6:62-7:20).

Although Aida does not explicitly teach that the boron-containing compound acts as a fungicide, Aida teaches a boron-containing material that is the same as claimed (zinc borate, see instant Claim 14) having an amount the same or greater than that which produce a fungicidal action (see 3-5% in instant Claim 3 and Aida's teaching at 6:62-7:20). Therefore, by providing the same ingredient and amount, the fungicidal action would have been inherent. **As to Claims 4**

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**and 5**, Aida teaches at least wood and polyethylene (6:19 and 3:39-45). **As to Claim 11**, Aida teaches zinc borate (6:67). **As to Claims 14 and 15**, Aida teaches at least zinc borate and wood (6:67 and 6:19).

**Claim 2** is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Aida (USPN 5221781).

**As to Claim 2**, Aida teaches a method for forming lignocellulosic thermoplastic composite products comprising incorporating an amount of boron-containing fungicide prior to forming the composite product (3:39-55, 6:18-21, 6:62-7:20). Aida further teaches the following ranges:

100 parts resin (6:24-25)

5-200 parts organic fillers including wood powder (6:19-25)

5-200 parts of compounds including zinc borate (7:12-15, 6:67)

In the Examiner's interpretation, sufficient specificity exists to anticipate the claimed range. Values within these ranges, such as 100 parts resin, 100 parts organic fillers, and 7 parts zinc borate, would fall within the claimed zinc borate range (7 parts zinc borate amounts to 3.4% by weight). In the alternative, the claimed range would have been prima facie obvious over Aida's teachings to use the materials in combinations of two or more (7:4-5 and 7:33-34) and to adjust these ranges (7:12-28), making the amount of zinc borate a result-effective variable.

Although Aida does not explicitly teach that the boron-containing compound acts as a fungicide, Aida teaches a boron-containing material that is the same as claimed (zinc borate, see

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instant Claim 14) having an amount the same or substantially the same as desired by Applicant.

Therefore, the fungicidal action would have been inherent.

Claim 3 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Aida (USPN 5221781). Aida teaches the subject matter of Claim 1 above under 35 USC 102(b).

As to Claim 3, Aida teaches the following ranges:

100 parts resin (6:24-25)

5-200 parts organic fillers including wood powder (6:19-25)

5-200 parts of compounds including zinc borate (7:12-15, 6:67)

In the Examiner's interpretation, sufficient specificity exists to anticipate the claimed range. Values within these ranges, such as 100 parts resin, 100 parts organic fillers, and 7 parts zinc borate, would fall within the claimed zinc borate range (7 parts zinc borate amounts to 3.4% by weight). In the alternative, the claimed range would have been prima facie obvious over Aida's teachings to use the materials in combinations of two or more (7:4-5 and 7:33-34) and to adjust these ranges (7:12-28), making the amount of zinc borate a result-effective variable.

***Claim Rejections - 35 USC § 103***

Claims 6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aida (USPN 5221781) in view of Lloyd (USPN 6368529). Aida teaches the subject matter of Claim 1 above under 35 USC 102(b).

**As to Claim 6**, Aida is silent to calcium borate. However, Lloyd teaches calcium borate (Abstract). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Lloyd into that of Aida because Lloyd teaches that an additional advantage of producing products with calcium borate in place of conventionally used zinc borate is that the calcium borates (a) have much better flow properties, making them easier to store and handle in processing equipment (9:1-5) and (b) cause less premature wear and failure (1:52-55), and (c) are less toxic than the zinc borates. **As to Claims 8-11**, Lloyd teaches at least calcium polytriborate (3:39) that is either natural or synthetic (3:39-41), and nobleite (3:42). **As to Claim 12**, Lloyd teaches colemanite (3:30-45, especially 3:41).

#### **(10) Response to Argument**

Appellant argues on page 7 that Aida teaches thousands of possible combinations including 36 inorganic fillers, 18 organic fire retardants, 23 inorganic fire retardants, and 11 organic fillers which are selected in combination. Appellant argues or concedes that 3 of the 23 inorganic fire retardants are boron containing. Appellant further argues that it would be necessary to pick and choose from thousands of combinations to reach the claimed invention. Appellant further argues that there is no direct disclosure of the thermoplastic resin, wood powder, and zinc borate of Claim 14.

The Examiner does not dispute that Aida discloses multiple embodiments, but instead asserts that the factual determination must take into account more than the number of components listed. In this case, Aida provides teaching of inorganic fillers (5:64-6:10) and organic fillers (6:18-21) and teaches that these inorganic or organic fillers “are used” in an

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amount in the range of 5 to 200 parts by weight compared to 100 parts by weight of resin (6:22-23), and therefore Aida teaches that the fillers are a required component. The organic fillers are recited at 6:18-21 and are wooden powder, chaff, shellac, coconut husk powder, cork powder, cellulose powder, natural and synthetic fibers, pulp, paper, and cloth. Of these, wooden powder, chaff, coconut husk powder, cork powder, cellulose powder, natural fibers, pulp, and paper are believed to contain lignocellulosic materials. Only shellac, synthetic fibers, and cloth organic fillers are believed to be excluded from the broadest reasonable interpretation of lignocellulosic materials. Thus, it is submitted that the filler is a required component, and that the substantial number of lignocellulosic fillers recited is sufficient to anticipate the claimed invention in combination with the disclosed flame retardants.

Aida further teaches organic (6:34-55) and inorganic (6:62-7:3) flame retardants, but further teaches that the organic flame retardants have a serious drawback in that they evolve noxious gases when they burn (1:43-50). Of the inorganic flame retardants, 3 of the 23 are boron-containing, and the Examiner's position is that these are sufficient to anticipate the claimed invention in combination with the disclosed fillers. Although it is believed that all of the claim limitations of Claim 14 were cited above in the rejection of that claim, Aida teaches thermoplastic resin (Abstract, line 1), wood(en) powder (6:19), and zinc borate (6:67).

Appellant argues on pages 8-9 that Aida solves a different problem, optimizes on totally different parameters, and provides no motivation or suggestion to form the composition identified by these claims, and teaches thousands of possible combinations.



The Examiner responds that Aida teaches a filler as a necessary component, and that a substantial number of the fillers listed by Aida are lignocellulosic. Aida also teaches a flame retardant, and teaches that inorganic flame retardants avoid the evolution of noxious gases during burning (1:42-50). Of the inorganic flame retardants, 3 of the 23 are boron-containing, which is a significant percentage which anticipates the claimed invention.

Appellant argues on pages 9-10 that claimed zinc borate range is outside the range specified by Aida. Appellant argues that Aida teaches that the maximum filler content is 200 parts by weight to 100 parts by weight resin. Appellant further argues that Aida teaches the inorganic flame retardants used in the range of 40 parts by weight to 200 parts by weight, a range of 13.3% to 66.6% of the total composite weight.

The Examiner responds that Appellant's arguments appear to focus only on the narrow teaching of Aida contained disclosed at 7:20, but do not appear to consider the broad disclosure of 5 to 200 parts by weight (7:13) of inorganic (6:62) flame retardants. The teaching of 5 parts by weight (7:13) of zinc borate (6:67) incorporated with 5 to 200 parts by weight of lignocellulosic filler such as wood powder (6:18-21) and 100 parts by weight (6:24-25) of thermoplastic resin (Abstract, line 1) meets the limitation to "about 3 to about 5 percent by weight" of the composite product recited in Claim 2.

Appellant argues that the reference discloses organic flame retardants used alone at levels as low as 5 parts by weight and inorganic flame retardants used alone at levels of at least 40 parts by weight. Appellant further argues that if it is assumed that Aida teaches less than 40 parts by

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weight of inorganic component, that an organic flame retardant must also be present, which is not present in the instant invention.

The Examiner agrees that Aida does appear to suggest that when the inorganic flame retardants are used in low concentrations, that they should be used in combination with an organic flame retardant (7:12-20). However, the instant invention does not exclude any component recited by Aida, and therefore does not distinguish the claimed invention from the prior art.

Appellant further argues on page 10-11 that the ranges associated with Aida are so broad that they do not invite experimentation. Appellant further argues that if Aida teaches zinc borate can be loaded at 5 parts, he also teaches it can be loaded at 0.1 parts, giving a zinc borate range of 0-66.6%, which is so broad that it does not invite experimentation.

The Examiner responds that the reference is sufficiently specific to anticipate the claimed range, or to adjust it to provide satisfactory flame retarding effect without deterioration of the mechanical strength and processability (1:65-68), thus inviting optimization and experimentation to achieve these aims within the ranges already suggested by the reference.

Appellant argues on page 11 that there is no suggestion or motivation for the combine the references and there is no reasonable expectation of success. Appellant argues on pages 11-12 that the calcium borate (colemanite) that was as effective at fungal control as zinc borate did not flow well, and that only the synthetic calcium hexaborate had better flow, and would not motivate one to make the combination.

The Examiner responds that Lloyd provides one example which would support Appellant's position, but the broad suggestion is that "An additional advantage of producing composite wood products with calcium borate additives in place of conventionally used zinc borate is that the calcium borates have much better flow properties, making them easier to store and handle in processing equipment." (9:1-5). The Examiner therefore submits that the motivation is still valid.

Appellant argues on pages 12-13 that Lloyd's teaching that a calcium compound could be used in mulch or plant foods in composite waste is not applicable when thermoplastics are involved. Appellant argues that wood plastic composites contain other components which would make wood plastic composites unacceptable as plant food or mulch.

The Examiner responds that a less toxic product would generally motivate one to make the combination. The reference suggests that the lower toxicity is beneficial in use and disposal (2:38), and does not pertain only to the disposal phase, as suggested by the Appellant's arguments. It is noted that the Hatton reference has been relied upon, but it is unclear how this affects or addresses the motivation suggested in the rejection.

Appellant argues on page 13 that Lloyd's premise for tool wear is the hardness of the borate, but Appellant asserts that calcium borate is harder than zinc borate, and that there would be no advantage over zinc borate.

The Examiner asserts that the motivation found in the reference has been taken at face value for its explicit suggestion. Even if Appellant's assertions regarding the hardness of zinc

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borate and calcium borate are correct, the motivation is based on tool wear and not on inherent hardness.

Appellant argues on pages 13 and 14 that Lloyd teaches that the calcium borates have some water solubility. Appellant further argues that for this reason, they could not be used for decking, and would warn one skilled in the art to avoid calcium borate in products which have direct contact with moisture.

The Examiner responds that neither Aida's method nor the instant method are limited to any particular intended use. There is no suggestion that one of ordinary skill would lack a reasonable expectation of success in the claimed method of making, and Lloyd clearly achieved sufficient success to claim substantially the same weight percentage calcium borate (Lloyd, 10:25-34).

Appellant argues on pages 14 and 15 that the use of calcium borate to provide resistance to surface impairments in thermoplastic lignocellulosic composites caused by mold represents a new use of the chemical at a range that differs significantly from Lloyd's teaching. Appellant argues that Lloyd's example clearly indicates that it is directed at decay fungus, Wood Rotting Basidiomycetes, and not at control of molds.

The Examiner responds that Appellant's arguments concede a teaching of about 0.1 to 4.5 percent, and 0.5 to 2 percent in the Lloyd reference (page 14, last two lines). It is unclear how this teaching is different than the claimed range. The instant invention appears to disclose

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benefits which would have been inherent to the method of Lloyd, the only difference being that Lloyd discloses a different binder than used in the method of Aida.

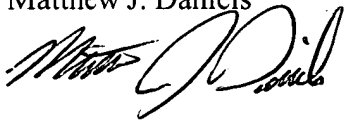
**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Matthew J. Daniels



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